

REMARKS

This application has been reviewed in light of the Office Action dated August 1, 2007 and the Advisory Action dated October 11, 2007. Claims 1-39 are presented for examination. Claims 1, 31, 32, 33, and 38 have been amended to define more clearly what Applicants regard as the invention. Claims 1, 31, 32, 33, and 38 are in independent form. Favorable reconsideration is requested.

Claims 1-9, 12, 15-23, 31-34, and 38 were rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,853,982 ("Smith") in view of U.S. Patent No. 7,149,732 ("Wen"). Claims 10-11 were rejected under 35 U.S.C. § 103(a) as obvious over Smith in view of Wen and U.S. Patent No. 6,035,294 ("Fish"). Claims 13-14 were rejected under 35 U.S.C. § 103(a) as obvious over Smith in view of Wen and U.S. Patent No. 6,385,602 ("Tso"). Claims 24-30, 35-37, 39 were rejected under 35 U.S.C. § 103(a) as obvious over Smith in view of Wen and U.S. Patent No. 6,446,068 ("Kortge").

Claim 1 recites, *inter alia*, that the distance function determines a distance between the query and the item in the collection based on a frequency of occurrence of items in the collection that have all of the properties in the third set of properties, wherein a higher frequency of occurrence of items in the collection having all of the properties in the third set of properties indicates a greater distance between the query and the item in the collection and a lower frequency of occurrence of items in the collection having all of the properties in the third set of properties indicates a smaller distance between the query and the item in the collection

As discussed in the specification, for example, at page 10, lines 3-24, the invention employs a distance metric defined in terms of the distance between two sets of properties. The distance is defined based on the actual frequency of occurrence of items in the collection corresponding to the combination of the common properties. Thus, the distance metric accounts for the similarity between items based not on the number of common properties, but rather the frequency of occurrence of items in the collection that share the common properties. This distance metric is advantageous in that it captures the dependence among properties in the context of the actual data.

For example, Lawyer, College Graduate, and High-School Dropout may all be frequently occurring properties, but the combination Lawyer + College Graduate is much more frequent than the combination Lawyer + High-School Dropout. Thus, two lawyers who both dropped out of high school would be considered more similar than two lawyers who both graduated from college. Such an observation can only be made if the distance metric takes into account the dependence among properties in the actual data collection.

The references cited in the Office Action, no matter how they hypothetically may be combined, do not teach or suggest such features.

Smith relates to methods for monitoring activities of online users and for recommending items to users based on such activities. (Col. 1, lines 7-9). In Smith, commonality index (CI) values are measures of the similarity between two items, with larger CI values indicating greater degrees of similarity. (Col. 15, lines 47-49).

As the Office Action acknowledges, Smith does not teach a distance metric in which a higher frequency of occurrence of items associated with all of the properties in the third set of properties indicates a greater distance between the query and the item, and a lower item frequency of occurrence of items associated with all the properties in the third set of properties indicates a smaller distance between the query and the item, as recited in Claim 1.

The other cited reference, Wen, relates to similarity determinations for queries used in information retrieval operations. The similarity function discussed in Wen calculates a similarity index (SI) between two queries based on: (a) the number of keywords in the queries; and (2) the number of common keywords. (Col. 5, lines 20-35). Larger SI values indicate greater degrees of similarity. (Formula 1, Col. 5, lines 20-35).

However, the similarity function of Wen merely counts the number of common keywords in two different queries to calculate a similarity index between the queries. The similarity index in Wen does not take into account the number of items in the collection that are associated with the common keywords and thus does not measure similarity in the context of the actual items stored in the database. By contrast, as discussed above, the distance function of Claim 1 determines the number of items in the collection associated with the common

properties. Accordingly, Wen does not remedy the shortcomings of Smith, discussed above, with respect to these claimed features.

With respect to Claim 1, the remarks in the Advisory Action state that “the third set of properties of the claimed invention equates to the set S of common properties, e.g., History, as $S=\{\text{History}\}$. The number of items associated with all the properties in S is One, this is the number of common keywords in the two queries of Wen.” However, Claim 1 does not recite “the number of items associated with all the properties”. Rather, Claim 1 recites “the frequency of occurrence of items in the collection that have all of the properties”.

It is respectfully submitted that the common keyword “History” cannot be equated to an item in the collection, because Claim 1 recites a method “for searching a collection of items, wherein each item in the collection has a set of properties.” Thus, the property “History” cannot be considered to be an item in the collection, because it does not have a set of properties – it is a property. Moreover, if “History” were considered to be an item in the collection, rather than a keyword or property, then the claimed “third set” would not be a “set of properties” common to the first and second sets of properties, as claimed.

For at least the above reasons, Claim 1 is believed to be patentable over the combination of Smith and Wen.

Claims 31, 32, 33, and 38 recite similar features to those discussed above with respect to Claim 1 and therefore are also believed to be patentable over the combination of Smith and Wen. A review of the other references cited above has failed to reveal anything which, in Applicant’s opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from the one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an addition aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Please charge any fees that may be due, or credit any overpayment of the same, to Deposit Account No. 08 0219. The Examiner is encouraged to telephone the undersigned attorney for the Applicant to resolve any outstanding issues.

Respectfully submitted,

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